REMARKS

Claims 1-10 are all the claims pending in the application.

Information Disclosure Statement

Pursuant to the Examiner's request in the Office Action of September 20, 2006, Applicant hereby submits a copy of the JP Jue et al. referenced submitted with the IDS originally filed on September 17, 2006.

35 U.S.C. § 103(a) Rejection

Claims 1-4 and 6-8 are rejected under 35 U.S.C. § 103(a) as allegedly obvious over Yamada et al. (U.S. Patent No. 7,058,303; hereinafter "Yamada") in view of Harada et al. ("Hierarchical Optical Path Cross-connect Systems for Large Scale WDM Networks"). Claims 5 and 9 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Yamada in view of Harada and Wang et al. (U.S. Patent Application No. 2003/0185565A1; hereinafter "Wang"). Applicant respectfully traverses the rejections.

Claim 1

Independent claim 1 is directed to an optical cross-connect unit of multigranular architecture. Claim 1 requires, *inter alia*:

> a first stage for switching wavelength bands, the first stage comprising:
>
> a first switching optical matrix for switching wavelength bands and having a plurality of input switch ports, a plurality of output switch ports, a plurality of input redirection ports, and a plurality of output redirection ports,
>
> first demultiplexer means for demultiplexing wavelength bands and having p groups of n outputs associated with n distinct wavelength bands, each output

being connected to a distinct one of the input switch ports of the first matrix, and

first multiplexer means for multiplexing wavelength bands and having p groups of n inputs each connected to a distinct one of the output switch port of the first switching optical matrix,

a second stage for switching wavelengths, the second stage comprising:

a second switching optical matrix for switching wavelengths and having input switch ports and output switch ports,

second demultiplexer means for demultiplexing wavelengths and having a plurality of inputs and a plurality of outputs, each input being connected to a distinct one of output redirection ports of the first switching optical matrix and each output being connected to a distinct input switch ports of the second switching optical matrix, and

second multiplexer means for multiplexing wavelengths and having a plurality of inputs and a plurality of outputs, each input being connected to a distinct one of the output switch ports of the second switching optical matrix and each output being connected to a distinct input redirection port of the first switching optical matrix,

wherein the first switching optical matrix includes a series of first optical switching submatrices and the second switching optical matrix includes a series of second switching submatrices.

Yamada relates to an optical cross-connecting device performing switching of wavelength multiplexed signals. Yamada discloses that wavelength multiplexed signals are switched by a first optical switch 2, and then only wavelength multiplexed signals necessary to be switched at small granularity are separated into M wavelength groups by demultiplexers 5. Each wavelength group, 6-1 to 6-M, is output to a second set of optical switches, 71- to 7-M, to be switched per wavelength group. As needed, the wavelength signals are output to demultiplexers so that the wavelength signals may be switched at progressively finer granularity,

until the signals are switched at the individual wavelength level. *See* Yamada, col. 6, line 63 - col. 7, line 35; Figure 1.

Yamada also discloses another embodiment, that introduces a switching stage where the wavelength groups are divided into a number of wavelength groups of small granularity before being input to the final demultiplexer and switch where the signals are divided and switched according to individual wavelength signals. *See* Yamada, col. 10, lines 18-55.

Applicant respectfully submits that the Examiner has not established a *prima facie* case of obviousness. To the extent that the Examiner is combining the 1st embodiment (cols. 6 and 7) with the 5th embodiment (cols. 10 and 11), these are different embodiments which may not be combined absent a specific teaching to do so. See *In re* Kramer, 18 USPQ2d 1415, 1416 (Fed. Cir. 1991); *Ex parte* Beuther, 71 USPQ2d 1313, 1316 (BPAI 2003). Thus, insomuch as the Examiner has failed to offer a motivation or teaching to combine the 1st and 5th embodiments of Yamada, the Examiner has failed to establish a *prima facie* case of obviousness, in the first instance.

Moreover, Applicant respectfully submits that Yamada and Harada, alone or combination, fail to teach or suggest all of the features of claim 1. Specifically, claim 1 recites that "a first switching optical matrix for switching wavelength bands", and "a second switching optical matrix for switching wavelengths". The "second stage" comprises "second demultiplexer means for demultiplexing wavelengths and having a plurality of inputs and a plurality of outputs, each input being connected to a distinct one of output redirection ports of the first switching optical matrix". Accordingly, the "first stage" and the "second stage" are connected, where the "first stage" switches "wavelength bands" and the "second stage" switches "wavelengths". Yamada does not disclose a stage "for switching wavelength bands" connected to "a stage for

connecting wavelengths". Rather, Yamada, in both the 1st and 5th embodiments, discloses switching by wavelength groups and then eventually by wavelengths.

Accordingly, Applicant respectfully submits that independent claim 1 would not have been obvious over Yamada in view of Harada because the references, alone or in combination, do not teach or suggest all of the features of the claim. Accordingly, Applicant respectfully requests that the Examiner withdraw the rejection of claims 2-4 and 6-8.

Claim 3

Claim 3 recites, in part:

> each of at least two of the second submatrices comprises at least one inter-input-matrix communications port and at least one inter-output-matrix communications port, and each of the inter-input-matrix communications ports is configured to receive an information carrier signal from one of said second optical switching submatrices and each of the inter-output-matrix communications ports is configured to deliver an information carrier signal addressed to one of said second optical switching submatrices.

The Examiner cites column 10, lines 31-64 of Yamada for allegedly disclosing the above recited features of claim 3. However, Applicant respectfully submits that Yamada fails to teach or suggest "inter-input-matrix communication ports and at least one inter-output-matrix communications ports". As explained on page 5 of the specification, "inter-input-matrix" and "inter-output-matrix" communications ports convert one more wavelengths of a band to another band, and therefore groom the information between bands, for example, to fill a partially-unoccupied band. These ports are distinct from the input and output switch ports of the switching optical matrices. The Examiner merely relies on the same portions of Yamada cited as disclosing the first and second *switching* stages of claim 1.

Accordingly, Applicant respectfully submits that claim 3, in addition to being patentable by virtue of its dependency from independent claim 1, is patentable because Yamada and Harada, alone or in combination, do not teach or suggest all of the features of the claim. Applicant, therefore, respectfully requests that the Examiner withdraw the rejection of claim 3.

Claim 4

Claim 4 recites, in part, "intermatrix switching means for coupling all of said inter-input-matrix communications ports to all of said inter-output-matrix communications ports." The Examiner cites the same switches relied upon as corresponding to the first and second switching means of claim 1. As is explained on page 5 of the specification of the present invention, the intermatrix switching means is capable of routing signals separately from the first and second *switching* stage, however, the Examiner attempts to rely on the same features of Yamada as teaching both the intermatrix switching means and the switching stages. Applicant respectfully submits that the elements are clearly distinct.

Accordingly, Applicant respectfully submits that claim 4, in addition to being patentable by virtue of its dependency from claims 3 and 4, is patentable because Yamada and Harada, alone or in combination, do not teach or suggest all of the features of the claim. Applicant, therefore, respectfully requests that the Examiner withdraw the rejection of claim 4.

Claims 5 and 9

Applicant respectfully submits that Wang fails to compensate for the deficiencies of Yamada and Harada, and therefore respectfully requests that the Examiner withdraw the rejection of the claims.

Claim 10

Applicant respectfully submits that Iannone fails to compensate for the deficiencies of Yamada and Harada, and therefore respectfully requests that the Examiner withdraw the rejection of the claims.

Conclusion

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,

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